

## AN EMPIRICAL INVESTIGATION OF THE RELATIONSHIP BETWEEN COLLEGE STUDENTS' FLOW FREQUENCY OF INTERNET USAGE AND INTERNET ADDICTION

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### ABSTRACT

Internet addiction is a major problem among our school-age population. The growing number of literature suggests that, among college students, internet addiction can often cause serious academic, emotional, social, and psychological treats. This study explores a new and important issue related to the relationship between flow frequency of internet usage and internet addiction behavior. The preliminary analysis of a survey data collected from 410 college students in Taiwan by using the judgmental sampling. The result of current study was found significant difference between the three internet usage activities including messaging (perceived social needs), online gaming (enjoyment), and internet application (perceived usefulness). To examine the effects of flow frequency among usage activities to internet addiction, multiple regression analysis was performed for all variables. The analytical results indicate that flow frequencies of usage activities significantly all dimension of internet addiction.

**KEYWORDS:** Internet Addiction, Flow Frequency, Internet Usage Activity

### INTRODUCTION

The rapid information technology developments yield the high percentage of internet users all over the worlds. According to a survey on broadband internet usage from Taiwan Network Information Center (TWNIC, March 2014), there were over 99% college students aged from 20 to 24 using internet frequently. 64.31% broadband internet users use internet communities, ranking the first, while 51.45% broadband internet users use instant messaging, ranking the second, and following searching, play games. Recently, an internet usage survey released by Office for National Statistics of Great Britain on May, 2014, reported that 91% of the young adult aged 16-24 use internet more than other aged groups. Adults aged 16-24 were most likely to engage in online activities that perceived enjoyment such as social networking (91%) and playing games (68%). The survey also reported the use of email is the most common activity undertaken on the internet by adults in Great Britain in 2014.

Over the past decade, researches and educationists have demonstrated that college students are addicted to the popularity of internet activities [1-2]. Recently, clinicians have reported cases of internet addiction as well. Internet addiction has been cited as characterizing unhealthy use of the internet, such as withdrawal symptoms, tolerances, compulsive use, time management problems [3].

Literatures have found that more and more researchers have sought to apply the flow construct to different fields. The popularity of internet and its tremendous potential to business and marketing, researchers have started shifting their focus to the flow phenomenon in the internet environment and suggested that internet usage and e-commerce that can

facilitate the occurrence of flow [4-5]. However, most published research has mainly examined the nature of flow experience or internet addiction such as gender impact [6], the frequency of flow experience [4-5]. Some examined the internet activities impact [7-8]. Since applying the flow construct to the internet addiction is a new research issue and not much has been done, this study examines the effect of flow theory on college students engaging in addiction behavior in Taiwan will bring another thought to further research.

## LITERATURE AND HYPOTHESIS DEVELOPMENT

Flow theory refers to those optimal, extraordinarily enjoyable experiences when people engage in an activity with total involvement and concentration [9], which in recent years has been applied to the behavior of internet activities by some research [4, 10]. The flow is used to describe the best feelings [9] and suggest that most experience of flow occur while people are performing their favorite activities [11]. For internet users the enjoyment promotes greater browsing and exploratory behaviors [12]. The flow is also suggested to be an important construct explaining college students' online experience [10]. Taiwanese research [13] examined college students' internet usage behavior by applying flow theory and found that the more students realize flow experience of internet environment, the more they proceed with exploring related behavior. [14] have proposed flow experience in cyber-game addiction and found that game player embracing perceptual distortion and enjoyment will shows a much stronger addiction. Following, it is suspected that people who enjoy flow experience activity may develop into a tendency toward addiction.

In one of the few studies on factors influencing internet usage, [15] concluded previous literatures and suggested three motives of recognition gaining, entertainment, and relationship maintenance. Similarly, [16] examined individual characteristics associated with using internet. The results suggested that ease of use, enjoyment, and usefulness factors affect internet use differentially. As this paper has discussed those popular online activities previously, the internet users perceived gaining or usefulness referred to "internet application" activity which includes searching and browsing; perceived enjoyment referred to "online gaming" activity; perceived relationship maintenance or social needs referred to "messaging" including e-mailing and social networking.

In this study, it is to be expected that college students engaging different internet activities will yield different degree of frequency of flow experience. Thus, we develop the null hypothesis:

**H1:** There was no significantly different effect between internet usage activities and flow frequency among college students.

There is a small but growing body of research about online environment that focuses largely on how frequency of internet flow experience fosters internet addiction [14, 17]. The flow frequency afforded by the Internet activity can lead college students to engage in behaviors such as compulsive use, tolerance, withdrawal behaviors. If college students percept higher level of flow frequency during online environment, it would be expected that one would see high level of addiction behavior. Thus, we develop the null hypothesis

**H2:** There are no significantly positive effects of flow frequency on internet addiction among college students.

## METHODS

### Samples and Procedure

Questionnaires were distributed to 525 college students from 15 classes in Taiwan during class time through

convenience sampling in 2013. Of these, 410 (78.1%) had completed the questionnaire and were included in the study; 292 (71.22%) were female and (118) 28.78% were male; 342 (83.41%) had internet experience over five years. The most frequent time that participants use internet was from one to three hours (53.17%) daily, followed by three to six hours (28.05%).

## Measures

Participants completed a questionnaire which included sections assessing demographics, internet usage activities, internet addiction, and frequency of flow experience

### Demographic Characteristics

The demographic section of the questionnaire included questions on participants' gender, age, and internet experience. All participants were asked if they can use internet on home. Those who had used internet were asked how long they had used internet, average daily internet use, and the weekly frequency.

### Internet Addiction Behavior

Internet addiction was assessed using Chinese Internet Addiction Scale-Revision (CIAS-R), developed by [18]. This scale includes 26 questions on a four-point self-rated measure with 1 = strongly disagree and 4 = strongly agree. The CIAS-R has a good reported validity and reliability with college students (see table 1), including five dimensions which are compulsive use (five questions), tolerance (four questions), withdrawal (five questions), time management (five questions), and physical conditions (seven questions).

**Table 1: Measurement for Addiction Behavior**

Dimension	Items Totally	Cronbach Alpha
Compulsive use	5	0.766
Tolerance	4	0.808
Withdrawal	5	0.827
Time management	5	0.879
Physical condition	7	0.848

### Frequency of Flow Experience and Usage Activities

Flow frequency and flow feeling dimensions involved in this variable and designed by [4] as [5] as well. This paper directly measured flow frequency dimension with a three-item following a narrative description of *flow* according to the degree to how participants perceived the following statement such as “ Do you think you have ever experienced flow on the Web?” by using a seven-point Likert scale from never to absolutely. Flow feelings with a three popular internet usage activities (messaging, online gaming, and internet application) to determine respondents' inner experience when in the flow state [4] by using a five-point scale from most lightly to most strongly. The measurement for frequency of flow experience will be weighted by both frequency and feeling.

## RESULTS

Analysis of variance (ANOVA) examined the research null hypothesis one. Table 2 presents the means, standard deviations, and F values comparing the three usage activities on flow frequency. The result of current study was found significant difference between the three internet usage activities ( $F = 4.43$ ,  $p < 0.01$ ), and the null hypothesis one was rejected. Following the results of ANOVA, the post hoc test identified degree of flow frequency from different activities

and the results identify that only pair of online gaming and messaging present significantly differences of flow frequency, and college students using online gaming will have higher degree of flow frequency than using messaging.

**Table 2: Perception of Flow Frequency by Internet Usage Activities**

Dependent Independent	Flow Frequency				
	Means	Std. Dev.	Levene	F Value	Post Hoc Test
Messaging	34.48	14.419	4.441**	4.43**	Online gaming > Messaging
Online gaming	42.71	19.712			
Application	36.83	16.357			

p<0.05 \*、p<0.01 \*\*、p<0.001 \*\*\*

To examine the effects of flow frequency among usage activities to internet addiction, multiple regression analysis was performed for all variables. The analytical results (table 3) indicate that flow frequencies of usage activities significantly predicted all dimension of internet addiction. Therefore, the null hypothesis two was rejected. Among three activities, the messaging activity was lacking statistical support to predict internet addiction.

**Table 3: Multiple Regression Analysis of Flow Frequency to Internet Addiction**

Dependent  Independent		Internet Addiction (β Value)				
		Compulsive Use	Tolerance	Withdrawal	Time Management	Physical Condition
Flow frequency	Messaging	0.051	0.103	0.135	-0.194**	-0.110
	Online game	0.219***	0.170**	0.188**	0.358***	0.309***
	Application	0.187**	0.168*	0.104	0.335***	0.196**
Results	R	0.405	0.387	0.375	0.492	0.382
	R <sup>2</sup>	0.164	0.150	0.141	0.242	0.146
	Adjusted R <sup>2</sup>	0.158	0.144	0.134	0.237	0.139
	F vlaue	26.554***	23.910***	22.185***	43.246***	23.075***
	D-W	2.045	1.935	1.952	1.862	1.863

\* p< 0.05;\*\* p< 0.01;\*\*\* p<0.001

## CONCLUSIONS

Internet addiction is a major problem among our school-age population. The growing number of literature suggests that, among college students, internet addiction can often cause serious academic, emotional, social, and psychological treats. This paper describes results of a study which surveyed 410 undergraduate internet users and provides evidence that different internet usage activity, such as messaging, online gaming, and internet application, can lead to problems of flow frequency. This study also explores a new and important issue related to the relationship between flow frequency and internet addiction. The results providing initial evidence in Taiwan are consistent with the result of [14]. The internet can provide a place to relax, escape pressures, and seek excitement. In this paper, college students engage in online gaming are perceived much more flow frequency of internet experience than those in other internet activities then causes problem of internet addiction.

This study contributes to the extent literature on internet addiction in several conceptual areas. First, findings are a first step in directly examining the effects of frequency of flow experience on internet addiction and suggest college students' internet addiction behavior may differ from the degree of flow experience and the frequency of flow experience. Once the relationship between flow experience and internet addiction is confirmed, the authors suggest that, it may provide suggestions for the intervention of pathological use of internet environment. As a result of the considerable attentions given

to this problem, in Asian countries such as South Korea and China have officially recognized and treated Internet addiction as a psychiatric disorder. Contrasting with the active efforts to address the problems related to Internet addiction, internet addiction has not been recognized as a major social problem in the scientific community by Taiwan government except for scholars.

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